

About IIASA

IIASA is an international scientific institute that conducts research into the critical issues of global environmental, economic, technological, and social change that we face in the 21st century. Our findings provide valuable options to policymakers to shape the future of our changing world. IIASA is independent and funded by national research organizations from Asia, Europe, the Americas and Oceania.

www.iiasa.ac.at



About GEF

The Global Environment Facility (GEF) is a partnership for international cooperation where 183 countries work together with international institutions, civil society organizations, and the private sector, to address global environmental issues. Through its Small Grants Programme the GEF has made more than 20,000 grants to civil society and community based organizations totaling \$1 billion.

www.thegef.org



About UNIDO

The UN Industrial Development Organization (UNIDO) is a specialized agency of the UN that promotes industrial development for poverty reduction, inclusive globalization, and environmental sustainability.

www.unido.org



The ISWEL project

- **Full name:** Integrated Solutions for Water, Energy, and Land
- **Duration:** 36 months
- **Starting Date:** November 2016

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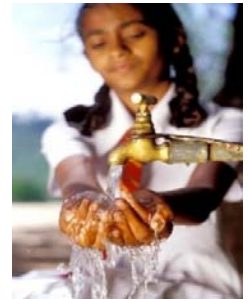


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IIASA-GEF-UNIDO partnership

INTEGRATED SOLUTIONS FOR WATER, ENERGY, AND LAND

Exploring pathways to achieve water, energy, food, and ecosystem security



Funded by



The Challenge

Humanity has accomplished major development goals over the last few decades, but there are still millions of people who do not have basic living standards and at the same time we are critically approaching and even exceeding some planetary boundaries—the physical limits of what the Earth can provide.

Growing demand for food, energy, and water will only exacerbate existing challenges in the coming years, and it is increasingly recognized that “business as usual” is eroding and cannot be a long term strategy.

We are therefore being challenged to adopt more integrated and more inclusive development pathways that avoid dangerous interference with the local environment and planetary boundaries.

Looking ahead to 2050:

- Up to 70% more food production will be required globally, with an even larger increase in developing countries;
- Electricity generation will double and access to energy will be universal;
- With an increasing need for energy and food, water demands are also expected to rise by 55%;
- 40% of the world’s population will probably live under severe water stress.

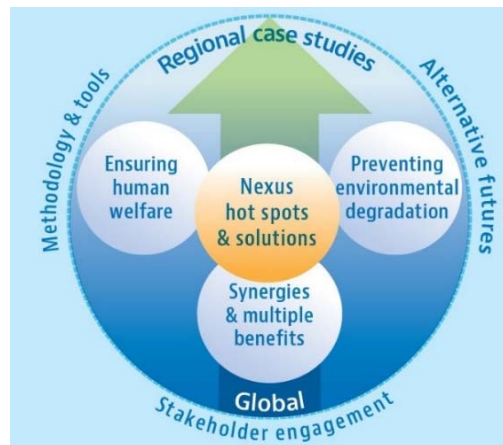
The Objective

ISWEL aims to examine the challenges and opportunities different regions of the world face when attempting to jointly meet water, land, and energy demands. The project will explore different development pathways and provide a portfolio of cost-effective solutions.

To accomplish this challenging task, IIASA will build on its extensive modeling expertise in system analysis to develop a **next-generation nexus modeling framework** for assessing synergistic solutions and strategies for the sustainable management of water, energy, and land resources.

Engagement with decision makers and research organizations will play a central role to:

- Frame and explore solutions to specific regional challenges;
- Build a common understanding about the synergies and trade-offs behind sectorial versus nexus-based decisions; and
- Support the co-design of future pathways and associated uncertainties about drivers and local developments.



Case Studies

The project will take a global approach, but it will zoom in on two transboundary river basins facing multiple development and environmental challenges.

With an area of 1.3 million km², the **Zambezi river basin** embraces eight countries (Zambia, Angola, Zimbabwe, Mozambique, Malawi, Tanzania, Botswana and Namibia), and hosts 38 million people. Rapid population growth, increasing climate variability, and the need to expand secure access to water, energy, and land, suggest that the basin will face serious challenges in achieving sustainable development goals.



The Indus river basin covers 1.1 million km², and embraces four countries (Pakistan, India, China and Afghanistan). This basin is currently the breadbasket for 250 million people, yet is facing serious water scarcity. Population growth, urbanization, and climate change are likely to exacerbate conflicts between borders and increase the challenge of sustainability.

